

AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application:

Listing of Claims:

1. (Previously Presented) A polishing solution for metal, comprising an oxidizing agent, an oxidized-metal dissolving agent, a first protective-film forming agent, a second protective-film forming agent having properties different from the first protective-film forming agent, and water, wherein a combination of the first protective-film forming agent and the second protective-film forming agent controls etching rate, while maintaining chemical mechanical polishing rate, of said metal.

2. (Original) The polishing solution for metal according to claim 1, wherein said first protective-film forming agent is at least one selected from a group of ammonia, amines, amino acids, imines, azoles, mercaptans and saccharides.

3. (Original) The polishing solution for metal according to claim 2, wherein said first protective-film forming agent is at least one selected from among benzotriazole and a derivative thereof.

4. (Original) The polishing solution for metal according to claim 1, wherein said first protective-film forming agent is a compound capable of forming a protective film by forming physical adsorption and/or chemical linkage on the metal film surface.

5. (Original) The polishing solution for metal according to claim 1, wherein said second protective-film forming agent is compounds having an alcoholic or phenolic hydroxyl group, esters, ethers, polysaccharides, amino acid salts, polycarboxylic acids, polycarboxylates, vinyl polymers, amides, azo compounds and molybdenum compounds.

6. (Original) The polishing solution for metal according to claim 5, wherein said second protective-film forming agent is at least one selected from a group of polyacrylic acids, polymethacrylic acids, polyamic acids, ammonium polyacrylates, ammonium polymethacrylates, ammonium polyamides and polyacrylamides.

7. (Original) The polishing solution for metal according to claim 1, wherein said second protective-film forming agent is a compound which assists the first protective-film forming agent in forming a protective film.

8. (Original) The polishing solution for metal according to claim 1, wherein said oxidizing agent is at least one selected from a group of hydrogen peroxide, nitric acid, potassium periodate, hypochlorous acid and ozone water.

9. (Original) The polishing solution for metal according to claim 1, wherein said oxidized-metal dissolving agent is at least one selected from a group of an organic acid, an ammonium salt of an organic acid, and sulfuric acid.

10. (Original) The polishing solution for metal according to claim 9, wherein said oxidized-metal dissolving agent is at least one selected from a group of malic acid, tartaric acid, citric acid, ammonium malate, ammonium tartrate and ammonium citrate.

11.-15. (Cancelled).

16. (Previously Presented) The polishing solution for metal according to claim 1, adapted to be used to polish a metal containing at least any one of copper, a copper alloy, a copper oxide and a copper alloy oxide.

17. (Previously Presented) The polishing solution for metal according to claim 1, which substantially does not contain any abrasive grains.

18. (Original) The polishing solution for metal according to claim 1, wherein said second protective-film forming agent is a compound which enables the first protective-film forming agent to be added in a smaller quantity; the first protective-film forming agent being necessary for controlling etching rate to 10 nm/minute or lower.

19. (Previously Presented) A polishing method comprising polishing a metal film formed on the surface of a polishing object, in the polishing solution for metal according to claim 1, to remove the metal film.

20. (Original) The polishing method according to claim 19, wherein said metal film contains at least any one of copper, a copper alloy, a copper oxide and a copper alloy oxide.

21. (Original) The polishing method according to claim 19, wherein;
said polishing object has a multi-layer film having a metal layer containing at least any one of copper, a copper alloy, a copper oxide and a copper alloy oxide;
said polishing method being a method of removing at least part of the metal film from the multi-layer film.

22. (Original) The polishing method according to claim 19, wherein said polishing solution for metal substantially does not contain any abrasive grains.

23.-33. (Cancelled)

34. (Previously Presented) The polishing solution for metal according to claim 1, having a chemical mechanical polishing rate of said metal of at least 100 nm/minute and an etching rate of said metal of at most 10 nm/minute.

35. (Previously Presented) The polishing solution for metal according to claim 34, wherein said etching rate of said metal is at most 1 nm/minute.

36. (Previously Presented) The polishing solution for metal according to claim 34, wherein said chemical mechanical polishing rate of said metal is at least 250 nm/minute.

37. (Previously Presented) The polishing solution for metal according to claim 34, wherein said metal is selected from the group consisting of copper, a copper alloy, copper oxide and a copper alloy oxide.

38. (Previously Presented) The polishing solution for metal according to claim 5, wherein said first protective-film forming agent is at least one selected from a group of ammonia, amines, amino acids, imines, azoles, mercaptans and saccharides.

39. (Previously Presented) The polishing solution for metal according to claim 6, wherein said first protective-film forming agent is at least one selected from among benzotriazole and a derivative thereof.

40. (Previously Presented) The polishing solution for metal according to claim 1, wherein the first protective-film forming agent is an agent which, in a comparison polishing solution together with the oxidizing agent, the oxidized –metal dissolving agent and water, and without the second protective-film forming agent, etches the metal at an etching rate of at most 10 nm/minute, and forms a sufficiently strong protective film on the metal so as substantially not to be removed therefrom; and the second protective-film forming agent is an agent such that said combination,

in said polishing solution, controls the etching rate to an etching rate of at most 10 nm/minute while permitting said chemical mechanical polishing of the metal to be performed.

41. (Previously Presented) The polishing solution for metal according to claim 1, wherein the first protective-film forming agent is an agent which, in a comparison polishing solution together with the oxidizing agent, the oxidized –metal dissolving agent and water, and without the second protective-film forming agent, etches the metal at an etching rate of at most 10 nm/minute, and forms a sufficiently strong protective film on the metal so as substantially not to be removed therefrom by a polishing pad; and the second protective-film forming agent is an agent such that said combination, in said polishing solution, controls the etching rate to an etching rate of at most 10 nm/minute while permitting said chemical mechanical polishing of the metal to be performed using a polishing pad.

42.-51. (Cancelled)